

**WHAT IS CLAIMED IS:**

1. An adhesive composition comprising a PHA, the adhesive composition having a surface tack time value of at most about 15 seconds,  
wherein, when exposed to a pressure of at most about 100 psig, the adhesive composition can form a bond with a surface or itself, the bond having a peel bond strength of at least about  $10 \text{ Nm}^{-2}$ .
2. The adhesive composition of claim 1, wherein the adhesive composition has a surface tack time value of at most about 5 seconds.
3. The adhesive composition of claim 1, wherein the adhesive composition has a surface tack time value of at most about 1 second.
4. The adhesive composition of claim 1, wherein the pressure is at most about 50 psig.
5. The adhesive composition of claim 1, wherein the pressure is at most about 10 psig.
6. The adhesive composition of claim 1, wherein the pressure is at most about 1 psig.
7. The adhesive composition of claim 1, wherein the peel bond strength is at least about  $100 \text{ Nm}^{-2}$ .
8. The adhesive composition of claim 1, wherein the peel bond strength is at least about  $500 \text{ Nm}^{-2}$ .
9. The adhesive composition of claim 1, further comprising a solvent for the PHA.

10. The adhesive composition of claim 9, wherein the adhesive composition contains at most about 90 weight percent solvent.

11. The adhesive composition of claim 9, wherein the composition comprises at most about 80 weight percent solvent.

12. The adhesive composition of claim 9, wherein the composition comprises at most about 75 weight percent solvent.

13. The adhesive composition of claim 9, wherein the composition comprises at most about 50 weight percent solvent.

14. The adhesive composition of claim 9, wherein the composition comprises at most about 35 weight percent solvent.

15. The adhesive composition of claim 9, wherein the composition comprises at most about 1 weight percent solvent.

16. The adhesive composition of claim 9, wherein the solvent comprises an organic solvent.

17. The adhesive composition of claim 9, wherein the solvent comprises an aqueous solvent.

18. The adhesive composition of claim 1, further comprising a mixed solvent system.

19. The adhesive composition of claim 18, wherein the mixed solvent system comprises water and a water immiscible organic solvent.

20. The adhesive composition of claim 1, wherein the PHA has a weight average molecular weight of from about 1,000 Daltons to about 900,000 Daltons.

21. The adhesive composition of claim 1, wherein the PHA has a glass transition temperature of from about -40°C to about 20°C.

22. The adhesive composition of claim 1, wherein the PHA has a crystallinity of from about 5% to about 65%.

23. The adhesive composition of claim 1, wherein the composition has an open time of at least about 10 minutes.

24. The adhesive composition of claim 1, wherein the composition has an open time of at least about 100 minutes.

25. The adhesive composition of claim 1, wherein the composition has an open time of at least about 200 minutes.

26. The adhesive composition of claim 1, wherein the adhesive composition is substantially free of adhesive additives.

27. The adhesive composition of claim 1, wherein the adhesive composition comprises at most about 95 weight percent adhesive additives.

28. The adhesive composition of claim 1, wherein the adhesive composition comprises at most about 50 weight percent adhesive additives.

29. The adhesive composition of claim 1, wherein the adhesive composition comprises at most about 10 weight percent adhesive additives.

30. The adhesive composition of claim 1, wherein the adhesive composition comprises at most about 1 weight percent adhesive additives.

31. The adhesive composition of claim 26, wherein the adhesive additives are selected from the group consisting of tackifiers, cross-linking agents, initiators, colorants, waxes, stabilizers and plasticizers.

32. The adhesive composition of claim 1, wherein the adhesive composition comprises at least about five weight percent PHA.

33. The adhesive composition of claim 1, wherein the adhesive composition comprises at least about 10 weight percent PHA.

34. The adhesive composition of claim 1, wherein the adhesive composition comprises at least about 25 weight percent PHA.

35. The adhesive composition of claim 1, wherein the adhesive composition comprises at least about 50 weight percent PHA.

36. The adhesive composition of claim 1, wherein the adhesive composition comprises at least two different PHAs.

37. The adhesive composition of claim 36, wherein one of the PHAs has a first weight average molecular weight, and a different PHA has a second weight average molecular weight, a difference between the first and second weight average molecular weights being at least about 1,000 Daltons.

38. The adhesive composition of claim 37, wherein the difference between the first and second weight average molecular weights being at least about 50,000 Daltons.

39. The adhesive composition of claim 37, wherein the difference between the first and second weight average molecular weights being at least about 100,000 Daltons:

40. The adhesive composition of claim 1, wherein the PHA has a polydispersity index of at least about two.

41. The adhesive composition of claim 1, wherein the PHA has a polydispersity index of at least about 2.2.

42. The adhesive composition of claim 1, wherein the PHA has a polydispersity index of at least about 2.5.

43. An article, comprising:  
a substrate having a surface; and  
a composition comprising a PHA,  
wherein the composition is supported by the surface of the substrate, the composition has a surface tack time value of at most about 15 seconds, and, when exposed to a pressure of at most about 100 psig, the composition can form a bond with a surface of a second substrate, the bond having a peel bond strength of at least about  $10 \text{ Nm}^{-2}$ .

44. The article of claim 43, wherein the peel bond strength is at least about  $100 \text{ Nm}^{-2}$ .

45. The article of claim 43, wherein the pressure is at most about 50 psig.

46. The article of claim 43, wherein the composition comprises at least two different PHAs.

47. The article of claim 46, wherein one of the PHAs has a first weight average molecular weight, and a different PHA has a second weight average molecular weight, a

difference between the first and second weight average molecular weights being at least about 1,000 Daltons.

48. The article of claim 43, wherein the composition has an open time of at least about 70 minutes.

49. The article of claim 43, wherein the PHA has a weight average molecular weight of from about 1,000 Daltons to about 900,000 Daltons.

50. The article of claim 43, wherein the PHA has a glass transition temperature of from about -40°C to about 20°C.

51. The article of claim 43, wherein the PHA has a crystallinity of from about 5% to about 65%.

52. An article, comprising:  
a substrate having a surface; and  
a composition comprising a PHA,  
wherein the composition is supported by the surface of the substrate, the composition has a surface tack of at most about 15 seconds, and the composition has an open time of at least about 70 minutes.

53. The article of claim 52, wherein the composition has an open time of at least about 100 minutes.

54. The article of claim 52, wherein the composition has an open time of at least about 200 minutes.

55. The article of claim 52, wherein the composition comprises at least two different PHAs.

56. The article of claim 55, wherein one of the PHAs has a first weight average molecular weight, and a different PHA has a second weight average molecular weight, a difference between the first and second weight average molecular weights being at least about 1,000 Daltons.

57. The article of claim 52, wherein the PHA has a weight average molecular weight of from about 1,000 Daltons to about 900,000 Daltons.

58. The article of claim 52, wherein the PHA has a glass transition temperature of from about -40°C to about 20°C.

59. The article of claim 52, wherein the PHA has a crystallinity of from about 5% to about 65%.

60. An article, comprising:  
a substrate having a surface; and  
an adhesive composition comprising a PHA having a weight average molecular weight of from about 1,000 Daltons to about 900,000 Daltons,  
wherein the composition is supported by the surface of the substrate, and, when exposed to a pressure of at most about 100 psig, the adhesive composition can form a bond with a surface, the bond having a peel bond strength of at least about 10 Nm<sup>-2</sup>.

61. The article of claim 60, wherein the weight average molecular weight of the PHA is from about 10,000 Daltons to about 500,000 Daltons.

62. The article of claim 60, wherein the weight average molecular weight of the PHA is from about 50,000 Daltons to about 250,000 Daltons.

63. The article of claim 60, wherein the weight average molecular weight of the PHA is from about 75,000 Daltons to about 115,000 Daltons.

64. An article, comprising:  
a substrate having a surface; and  
a composition comprising a PHA having a crystallinity of from about 5% to about 65%,

wherein the composition is supported by the surface of the substrate, and, when exposed to a pressure of at most about 100 psig, the adhesive composition can form a bond with a surface, the bond having a peel bond strength of at least about  $10 \text{ Nm}^{-2}$ .

65. The article of claim 64, wherein the PHA has a crystallinity of less than about 45%.

66. The article of claim 64, wherein the PHA has a crystallinity of from about 5% to about 40%.

67. An article, comprising:  
a substrate having a surface; and  
a composition comprising at least one PHA having a glass transition temperature of from about  $-40^{\circ}\text{C}$  to about  $20^{\circ}\text{C}$ ,

wherein the composition is supported by the surface of the substrate, and, when exposed to a pressure of at most about 100 psig, the adhesive composition can form a bond with a surface, the bond having a peel bond strength of at least about  $10 \text{ Nm}^{-2}$ .

68. The article of claim 67, wherein the glass transition temperature of the PHA is from about  $-10^{\circ}\text{C}$  to about  $-35^{\circ}\text{C}$ .

69. The article of claim 67, wherein the glass transition temperature of the PHA is from about  $-10^{\circ}\text{C}$  to about  $-25^{\circ}\text{C}$ .

70. A method, comprising:  
contacting a composition with a surface of an article, the composition containing a PHA and a solvent for the PHA; and



processing the composition to form a layer having a surface tack time value of at most about 15 seconds,

wherein, when exposed to a pressure of at most about 100 psig, the layer can form a bond, the bond having a peel bond strength of at least about  $10 \text{ Nm}^{-2}$ .

71. A method comprising:

pressing a PHA between at least two surfaces to form a pressed PHA; and

separating the surfaces to expose the pressed PHA, the pressed PHA having a surface tack time value of at most about 15 seconds,

wherein, when exposed to a pressure of at most about 100 psig, the pressed PHA can form a bond with a surface, the bond having a peel bond strength of at least about  $10 \text{ Nm}^{-2}$ .

72. An adhesive composition, comprising:

a first PHA having a first weight average molecular weight; and

a second PHA having a second weight average molecular weight,

wherein a difference between the first and second weight average molecular weights is at least about 1,000 Daltons, and, when exposed to a pressure of at most about 100 psig, the adhesive composition can form a bond with a surface, the bond having a peel bond strength of at least about  $10 \text{ Nm}^{-2}$ .

73. An article, comprising:

a substrate having a surface; and

an adhesive composition supported by the surface of the substrate, the adhesive composition comprising:

a first PHA having a first weight average molecular weight; and

a second PHA having a second weight average molecular weight,

wherein a difference between the first and second weight average molecular weights is at least about 1,000 Daltons, and, when exposed to a pressure of at most about 100 psig, the adhesive composition can form a bond with a surface, the bond having a peel bond strength of at least about  $10 \text{ Nm}^{-2}$ .

74. An adhesive composition, comprising:  
a first PHA; and  
a second PHA,  
wherein the first PHA has a polydispersity index of at least about two, and, when exposed to a pressure of at most about 100 psig, the adhesive composition can form a bond with a surface, the bond having a peel bond strength of at least about  $10 \text{ Nm}^{-2}$ .

75. An article, comprising:  
a substrate having a surface; and  
an adhesive composition supported by the surface of the substrate, the adhesive composition comprising:  
a first PHA; and  
a second PHA,  
wherein the first PHA has a polydispersity index of at least about two, and, when exposed to a pressure of at most about 100 psig, the adhesive composition can form a bond with a surface, the bond having a peel bond strength of at least about  $10 \text{ Nm}^{-2}$ .